Transmission Business Line
Non-Construction Alternatives Round Table Meeting
Executive Summary
March 6, 2003

Members present
Ken Canon, Industrial Customers of Northwest Utilities
Ralph Cavanagh, Natural Resources Defense Council
Art Compton, Montana Department of Environmental Quality
Tom Foley, Non-Wires Study consultant
Nancy Hirsh, Northwest Energy Coalition
Hardev Juj, Seattle City Light
Robert Kahn, Northwest Independent Power Producers Coalition
Tom Karier, Northwest Power Planning Council, Washington state
Paul Kjellander, Idaho Public Utilities Commission
Steve LaFond, The Boeing Company
Sue McLain, Puget Sound Energy
Kris Mikkelsen, Inland Power & Light Company
Bill Pascoe, Northwestern Energy
Heather Rhoads-Weaver, Northwest Sustainable Energy for Economic Development
Margie Schaff, Affiliated Tribes of Northwest Indians, Economic Development Corporation
Brian Silverstein, Bonneville Power Administration
Dick Wanderscheid, City of Ashland
Vickie VanZandt, Bonneville Power Administration

Members absent:
John Savage, Oregon Public Utility Commission

Observers and members of the public
Ken Corum, Northwest Power Planning Council

Project staff present:
Carolyn Whitney, vice president of TBL Business Strategy, Public and Tribal Affairs
Mike Weedall, vice president of Energy Efficiency
Mark Jackson, general engineer Business Strategy, Transmission Marketing
Darby Collins, public affairs specialist
Sally Grabowski, communication assistant
Marion Cox, facilitator

Executive Summary

Transmission Business Line Vice President of Operations and Planning Vickie VanZandt opened the second meeting of the Non-Construction Alternatives Round Table on March 6 saying that the process is important to TBL and the region. It is her responsibility to plan and operate the grid. The grid is in poor shape due to new uses, but its resiliency is also suffering. "We've used reactive supply to shore up the system without building new lines, but that has made the system brittle," she said. The problem is the same as not having good enough shocks on a car to protect it. That points out the need for either new lines or for alternatives to building new lines.

With a focus on determining alternatives, facilitator Marion Cox outlined what the TBL would like to accomplish at the meeting:

- Review current study methodology to assist BPA in developing a "template" for structuring future studies.
- Select additional studies.
- Determine what technologies can be considered non construction alternatives.
- Gain input on institutional barriers.

Understanding what TBL means by non-construction alternatives (NCA) begins with *definitions*, according to Brian Silverstein, manager of TBL Network Planning (see Definitions and Roadmap documents):

- *Screening criteria*: given certain characteristics, is this a good candidate project for NCA without doing a detailed study.
- A *detailed study* determines the technical and economic viability of non-wires alternatives. TBL completed the Kangley-Echo Lake study and presented it at the meeting.
- TBL has identified about 20 potential *projects*, these are areas where there are problems on the grid and potential wires fixes have been identified (see the G-20 list). Two to three projects were identified as being as good candidates for *detailed study* of non-construction alternatives.
- The r*ound table* will help TBL develop insights.

Review non-wires alternatives and technologies

See the Power Point presentation, "Non-Construction Options and Opportunities," by Mike Weedall, vice president, BPA Energy Efficiency, for details:

- Orcas Island: One of three underwater transmission cables failed and the decision was made to aggressively pursue demand side management -- specifically to cut demand by 7 MW -- until a second cable could be constructed in about three years. The cable was energized last year. The alternative was to build another cable or to ship diesel to the island to run temporary generators.
- A 2002 Department of Energy study of the national transmission grid. It looked at both transmission and non-transmission alternatives. FERC's Standard Market Design specifically includes demand response. RTO West proposal also incorporates these tools.
- New England Demand Response Initiative is a policy study with the New England ISO that looked at tools, such as demand exchange.
- Northern Oneonta Targeted Demand Side Management Study in upstate New York looked at a capacity problem in an area of residential and small commercial electric customers, and

with mostly gas heating and water heating. They found a limited number of DSM measures, but concluded they would need to achieve a 30 percent penetration of measures in the first year.

- Pacific Gas & Electric -- Tri-Valley project: This project considered DSM and distributed generation to defer transmission needs. They needed 100 MW to 150 MW, but determined they could only get 4 MW per year.

Technologies (Mike Hoffman, BPA)

- Smart Grid -- participation in EPRI Consortium for Electric Infrastructure for a Digital Society.
- BPA operated a super-conducting magnet storage facility in the early 1990s.
- Northwest Energy Efficiency Alliance's conservation voltage regulation project, with the potential to save 10's of megawatts.
- Demand Exchange began in late 1999 and 2000. In August 2000, BPA had 53 MW in the demonstration program and the trading floor asked for more. Because of the aluminum smelters, BPA had 800 MW by December.
- Load Center Generation is smaller combustion turbines near load centers for peaking. They are expensive and have air quality issues. Also are microturbines in commercial buildings. See the 200 Market Building in Portland (www.bpa.gov) as an example.
- Regenysis in the UK is installing 120 MWh of storage by literally snapping together fuel cells. There is one being installed in Columbus, Miss. for TVA at a cost of about $25 million, excluding site costs.
- PacifiCorp is installing a VanTech 250 KW flow battery in Moab, Utah for peaking. It will have no emissions.
- Energy Web integrates a diversity of resources, which gives it the potential for working with existing systems. The biggest challenge to BPA is to ensure that everyone gets a piece of the value - the generation system, the transmission system, customers, etc.
- Round table members added as non-construction alternatives: appliances, biomass, biofuels, methane digesters (Tillamook PUD), wastewater treatment plant DSM. They also suggested looking for grants to help pay for technologies and development and to look for partners that share the cost and benefits.

BPA fuel switching policy

In a Sept. 14, 2001 letter to the Northwest Power and Conservation Council, BPA said the market-based approach to fuel switching as an energy efficiency measure is appropriate. In a reading of the NW Power and Conservation Act, it is hard to find fuel switching in either conservation or resource acquisition, Weedall said.

Round table members suggested fuel switching could be considered a load management measure. However, Weedall said BPA differentiates between fuel switching and load management. For example, Milton Freewater turns off water heaters when they need to clip their peak. Fuel switching removes load, the other clips peaks. On the other hand, Silverstein said that with fuel switching the load is gone all the time, so from a transmission load standpoint that is a benefit.

Olympic Peninsula Reinforcement Project and Non-Construction Alternatives

The Olympic Peninsula Reinforcement project is G-12 on the list of infrastructure projects, according to Mark Jackson, TBL general engineer (see presentation). Studies show that extra heavy winter loading in 2006 could lead to a voltage collapse, or a double outage (N-2 contingency) now could also result in a voltage collapse. The area is without natural gas. Building transmission would cost about $25 million, so whatever is done must cost less than that (opportunity for big bang for the buck). This is a good pilot project because the lines only serves the Peninsula and alternatives would achieve the full benefit for each megawatt reduced. Other alternatives to projects, such as Kangley-Echo Lake, get less than half that return.

Demand deferral is a cost-effective alternative. There are four to five customers with demand over 5 MW. The largest, the Navy with 20 MW of generation, turned BPA down. There is an institutional barrier. Some round table members questioned the effectiveness of Demand Exchange, especially whether a voluntary program could produce the demand reduction needed when called upon, and one member asked why not use contractual means to interrupt load. Jackson said the pilot would explore a variety of contractual options for obtaining demand deferrals and TBL would approach large industrial customers with options such as guaranteed payment for a fixed number of deferred load hours, open demand market, "whatever works for the customer will work for the program.

One member suggested that to reach the potential for demand reduction at pulp and paper facilities sometimes requires a plant to add stock storage so it can shut down for a short period of time and that requires a capital investment. Another member suggested using conservation. Jackson said BPA has set up a platform for dispatchable demand reduction for the pilot using the Demand Exchange and that reducing energy through conservation is less attractive to the transmission system than are those things that can be called on when needed.

When considering DSM, one member suggested looking at the inclusive values to the transmission grid, to the distribution grid and to generation, which would raise the value of DSM. TBL could develop the transmission value in this case, while Puget Sound Energy could develop the DSM.

Kangley-Echo Lake (KEL) economic screening and sensitivity analysis

KEL is part of a project (G-1) in Puget Sound that has a completed detailed study. A group of experts looked at non-construction alternatives, concluding that those alternatives could not be developed quickly enough or in sufficient quantities to solve the transmission problem. The alternatives included DSM, demand response and generation and distributed generation strategically sited (see presentation and full report).

Although some of the non-construction alternatives are cost-effective from a total resource cost perspective, one of the problems is who pays, who benefits and how to charge people who benefit, said Tom Foley, one of the study authors. Eliminating the line proved to be a non-starter, but deferring might have been possible. Clearly there were benefits for the alternatives, but the need for a solution was only a year out.

Among the issues TBL faced in this study were determining who benefits, pays and implements; load forecasting and lead-time. These factors must be considered for future projects.

The demand response alternative would have required a 28 percent penetration rate for large industrial demand reduction by the third year. Unlike the Olympic Peninsula, if the alternative reduces 100 MW of load, on average, the grid only gets a 32 MW reduction at the overloaded transformer in King County, which makes measures more expensive.

Future projects for additional analytical study
The TBL asked the round table to help it decide on three more projects to do detailed studies of alternatives. Ultimately, TBL will decide. The projects must:
1. Address a real problem.
2. The need has to be far enough off in the future for TBL to respond in time.
3. It has to provide a big bang for the buck.
4. Study must be completed by Sept. 30, 2003.

Round table members provided other criteria: they said DSM solutions work best if coupled with other partners/sources of funding and there should be multiple parties involved in order to break through the institutional barriers.

Of three projects, one should be urban and one rural to compare the success of demand response. The urban project should also look at DSM. In addition, one could have generation potential.

Selected projects:
- G-12, the Olympic Peninsula additions, would work (a rural project).
- G-19, Pacific NW to Idaho, phase II. The date may fall back with slow growing load. $100 million is very expensive. Could do a true integrated plan.
- BPA will continue to look to determine if there is a third project to analyze this year.

While the timing on G-8, Monroe to Echo Lake, clearly fits the timing criteria, it is driven in large part by new generators that may get built. Several parties questioned what non-construction alternatives should be considered after a developer sites new generation and agrees to fund any needed transmission.

Institutional issues
It will be very difficult to implement non-wires alternatives without first resolving some institutional issues. The intent is to overcome the issues, not just to identify them. Tom Foley developed an initial list of issues and a matrix of stakeholders.

One member said that the round table would not be able to fix many of the barriers --identified by a matrix of barriers and organizations. For example, FERC and states can't agree on standard marketing design.

However, several volunteers agreed to work through the matrix and to:
- Refine and expand the list of issues
- Clearly define each issue
- Identify who can resolve the issue
- Provide wording describing each actor's responsibility

- Report back to June meeting.

Volunteers are Ken Corum; Ken Canon; Sue McLain; Paul Kjellander volunteered an Idaho PUC staff member; Bob Kahn; Kris Mikkelsen; and Steve LaFond. Tom Foley is responsible for the effort and will bring the information back to the June meeting.

Requests from members or action items

- Add someone from operations to the round table.
- How would Contract Lock activities influence this process? Contract Lock has a weekly meeting and information is available on the web at http://www2.transmission.bpa.gov/business/ContractLock/contractlock.cfm.
- Run all G-20 projects through the criteria of cost, timing, potential, etc.
- Institutional barrier matrix.

Next meeting

Next meeting is June 19 at BPA Headquarters, room 122.

Agenda:

- Institutional barriers
- Screening criteria. Needed by September meeting. BPA will offer draft criteria to begin discussion.
- Pilot projects
- Status report on detailed analyses, which will feed the screening criteria.
- Brief status report on Contract Lock. In the meantime, will provide internet link